

# MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

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## INTEROFFICE COMMUNICATION

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TO: Tarek Buckmaster, Permits Section, Water Resources Division

FROM: Amanda Bosak, Permits Section, Water Resources Division

DATE: November 18, 2018

SUBJECT: DECO-Monroe Plant - Permit Review Recommendations for Toxics  
National Pollutant Discharge Elimination System (NPDES) Permit No.  
MI0001848

Pursuant to your request, we have rereviewed the NPDES permit reissuance temperature recommendations for the Detroit Edison Company - DTE Energy for the DECO-Monroe Plt. The re-review was requested based on more recent temperature recommendations and acute temperature concerns with non-contact cooling water discharges. The facility is requesting to continuously discharge 1,978 million gallons per day (MGD) of noncontact cooling water, fly ash transport water, bottom ash transport water, coal pile runoff, chemical metal cleaning wastes, nonchemical metal cleaning wastes, boiler water drained from boilers during outages, treated flue gas desulfurization wastewater, flue gas desulfurization pre-treatment system backwash, demineralizer regeneration wastes, miscellaneous low volume wastes, and storm water runoff to Lake Erie via outfall 001. Lake Erie offers a 10:1 dilution of lake to effluent.

### Monitoring Point 001A

#### Temperature

- 1) The current permit includes daily monitoring of temperature. Temperature from January 2010 to January 2015 ranged from 34 to 103°F with an average of 75°F. In addition to effluent temperatures reporting, the facility is required to collect temperature readings (Monday – Friday only) at the outlet to Lake Erie when the effluent is  $\geq 100^{\circ}\text{F}$ . Based on the request for rereview, additional temperature data was reviewed for these recommendations. Temperature from January 2010 through September 2019 ranged from 34 to 104°F with an average of 76°F. Based on similar reviews for other powerplants and to protect aquatic life in Lake Erie, **we recommend that the draft permit include an acute daily maximum temperature limit of 94°F at the outlet to Lake Erie. The facility should be required to monitor the outlet to Lake Erie daily when temperatures at Monitoring Point 001A exceed 94°F.**
  - a. From January 2010 through September 2019 the facility reported 3,499 temperature readings. Of the 3,499 readings, 312 exceeded 94°F (9%).

- b. The months when temperatures exceed 94 °F are June, July, August, and September.

All other recommendations for Outfall 001 should be retained in the draft permit.

The recommendations contained herein are based on the Part 4 Water Quality Standards and Part 8 Water Quality-Based Effluent Limit Development for Toxic Substances. Treatment methods or economic concerns have not been addressed.

The temperature limit of 94°F is recommended as the median acute temperature threshold using information from multiple sources and fish species.

Family and Species (Scientific Name)	Acute Temperature thresholds °F <sup>1</sup>	Acute Temperature thresholds °F <sup>2</sup>	Acute Temperature thresholds °F <sup>3</sup>	
<b>Petromyzontidae</b>				
Silver lamprey ( <i>Ichthyomyzon unicuspis</i> )				
<b>Lepisosteidae</b>				
Longnose gar ( <i>Lepisosteus osseus</i> )		94.1		
<b>Amiidae</b>				
Bowfin ( <i>Amia calva</i> )		98.6	98.6	
<b>Hiodontidae</b>				
Mooneye ( <i>Hiodon tergisus</i> )		80.6		
<b>Clupeidae</b>				
Alewife ( <i>Alosa pseudoharengus</i> )		93.2	88.3	
Gizzard shad ( <i>Dorosoma cepedianum</i> )		87.8	95.9	
<b>Cyprinidae</b>				
Goldfish ( <i>Carassius auratus</i> )			96.4	
Common carp ( <i>Cyprinus carpio</i> )		95	102.2	
Spotfin shiner ( <i>Cyprinella spiloptera</i> )		96.8	96.8	
Striped shiner ( <i>Luxilus chrysocephalus</i> )				
Common shiner ( <i>Luxilus cornutus</i> )		89.6	88.2	
Redfin shiner ( <i>Lythrurus umbratilis</i> )				
Silver chub ( <i>Macrhybopsis storeriana</i> )				
Hornyhead chub ( <i>Nocomis biguttatus</i> )				
River chub ( <i>Nocomis micropogon</i> )				
Golden shiner ( <i>Notemigonus crysoleucas</i> )			92.1	
Emerald shiner ( <i>Notropis atherinoides</i> )		87.8	83.5	
Blackchin shiner ( <i>Notropis heterodon</i> )			100.4	
Blacknose shiner ( <i>Notropis heterolepis</i> )				
Spottail shiner ( <i>Notropis hudsonius</i> )		91.04	91.8	
Sand shiner ( <i>Notropis stramineus</i> )				
Mimic ( <i>Notropis volucellus</i> )				
Bluntnose minnow ( <i>Pimephales notatus</i> )		95	88.7	
Fathead minnow ( <i>Pimephales promelas</i> )		91.4	93.4	
<b>Catostomidae</b>				

White sucker ( <i>Catostomus commersoni</i> )	82	88.88	88.9	
Quillback ( <i>Carpionodes cyprinus</i> )		94.1	90.9	
Northern hog sucker ( <i>Hypentelium nigricans</i> )		87.44	87.4	
Bigmouth buffalo ( <i>Ictiobus cyprinellus</i> )				
Black buffalo ( <i>Ictiobus niger</i> )				
Silver redhorse ( <i>Moxostoma anisurum</i> )		98.96		
Golden redhorse ( <i>Moxostoma erythrurum</i> )				
Shorthead redhorse ( <i>Moxostoma macrolepidotum</i> )		94.1		
Spotted sucker ( <i>Minytrema melanops</i> )		87.8	87.8	
Greater redhorse ( <i>Moxostoma valenciennesi</i> )				
<b>Ictaluridae</b>				
Black bullhead ( <i>Ameiurus melas</i> )			99.5	
Yellow bullhead ( <i>Ameiurus natalis</i> )		97.52	97.5	
Brown bullhead ( <i>Ameiurus nebulosus</i> )		100.4	100.2	
Channel catfish ( <i>Ictalurus punctatus</i> )	95	95	98.1	
Tadpole madtom ( <i>Noturus gyrinus</i> )		100.4		
Brindled madtom ( <i>Noturus miurus</i> )				
<b>Esocidae</b>				
Grass pickerel ( <i>Esox americanus</i> )		84.02		
Northern pike ( <i>Esox lucius</i> )	86	73.4	87.8	
Muskellunge ( <i>Esox masquinongy</i> )			90	
<b>Umbridae</b>				
Central mudminnow ( <i>Umbra limi</i> )		84.02	92.3	
<b>Osmeridae</b>				
Rainbow smelt ( <i>Osmerus mordax</i> )		82.4		
<b>Salmonidae</b>				
Rainbow trout ( <i>Oncorhynchus mykiss</i> )	75	63.5	77	
<b>Fundulidae</b>				
Banded killifish ( <i>Fundulus diaphanus</i> )		100.4	89.1	
<b>Atherinopsidae</b>				
Brook silverside ( <i>Labidesthes sicculus</i> )				
<b>Moronidae</b>				
White perch ( <i>Morone americana</i> )		97.52	96.8	
White bass ( <i>Morone chrysops</i> )		95	95.5	
<b>Centrarchidae</b>				
Rock bass ( <i>Ambloplites rupestris</i> )		100.4	96.8	
Hybrid sunfish				
Green sunfish ( <i>Lepomis cyanellus</i> )		96.8	104	
Orangespotted sunfish ( <i>Lepomis humilis</i> )				
Pumpkinseed ( <i>Lepomis gibbosus</i> )		99.5	99.7	
Bluegill ( <i>Lepomis macrochirus</i> )	95	92.84	104.4	
Northern sunfish ( <i>Lepomis peltastes</i> )				
Smallmouth bass ( <i>Micropterus dolomieu</i> )		95	101.1	

Largemouth bass ( <i>Micropterus salmoides</i> )	93	96.8	89	
				<b>All data</b>
Minimum	75.0	63.5	77.0	<b>63.5</b>
Maximum	95.0	100.4	104.4	<b>104.4</b>
Mean	87.7	91.9	93.8	<b>92.4</b>
Median	89.5	94.1	94.5	<b>94.1</b>

Source for fish species present in the system:

James T Francis; Justin A Chiotti; James C Boase; Mike V Thomas; Bruce A Manny; Edward F Roseman Title: A Description of the Nearshore Fish Communities in the Huron-Erie Corridor Using Multiple Gear Types

Sources for temperature thresholds:

<sup>1</sup>EPA-600/3-77-061 May 1977 Temperature Criteria for freshwater fish:protocol and procedures

<sup>2</sup>Wisner, D.A. and A.E. Christie. 1987. Temperature Relationships of Great Lakes Fishes: A Data Compilation. Great Lakes Fish. Comm. Spec. Pub. 87-3. 165 p.

<sup>3</sup>Sarah S. Hasnain, S.S, Minns, C.K, Shuter, B.J. 2010 Key Ecological Temperature Metrics for Canadian Freshwater Fishes. Ministry of Natural Resources. 54 p.